May 21, 2020

Mr. Ken Rhame
On-Scene Coordinator
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

Subject: **Emergency Response Letter Report**
Lineage Logistics Ammonia Release
Statesville, Iredell County, North Carolina
Contract Number: 68HE0519D0006
Task Order / Task Order Line Item No.: 68HE0419F0082 / 82-007

Dear Mr. Rhame:

The Tetra Tech, Inc. Superfund Technical Assessment and Response Team (Tetra Tech START) submits this letter report to summarize the emergency response activities conducted January 11 through 14, 2020, at the Lineage Logistics ammonia release in Statesville, Iredell County, North Carolina (see Enclosure 1, Figure 1). This report includes four enclosures. Enclosure 1 contains the site location figures. Enclosure 2 contains air monitoring and surface water sample results. Enclosure 3 contains a photographic log of response activities. Enclosure 4 contains logbook notes. Enclosure 5 contains the Tetra Tech START data validation package. Attachment 1 provides the laboratory analytical data package.

SITE DESCRIPTION

Lineage Logistics is a cold storage facility located at 3776 Taylorsville Hwy, Statesville, NC 28625. Its geographical coordinates are 35.816306 degrees north and -80.962874 degrees west (see Figure 1 of Enclosure 1). Directly adjacent to the west of the property is Diversified Finishers, a small metal finishing company; further west and to the north of the site is a wooded area; approximately 1,000 feet northwest and across Taylorsville Highway to the south are residential homes; and to the northeast is Pratt Industries, a warehouse facility.

BACKGROUND

According to the National Response Center report (NRC# 1268405), on the evening of Friday, January 10, 2020, the Linage Logistics facility had a release of anhydrous ammonia from a cooling system at the facility. The report also stated there was an evacuation of 30-35 employees and contractors and one reported fatality.

At the time of the report, fire and police personnel were already on scene, and vacuum trucks were in-route with the initial cleanup underway. At the time of the NRC report, the amount of ammonia released was unknown.

ACTIVITIES CONDUCTED

Tetra Tech START arrived on site on Saturday, January 11th, 2020. The Environmental Protection Agency (EPA) On-Scene Coordinator (OSC) Ken Rhame tasked Tetra Tech START to document response activities, conduct air monitoring around the facility, and sample surface water from an onsite

retention pond for ammonia. Several local fire departments, police, and emergency medical technicians (EMT) also mobilized in shifts to provide support during emergency response activities.

Throughout the response, local fire department teams conducted level A entries into the building to record video, collect photographs, open doors to assist with venting, and to check ammonia concentrations inside the building. Lineage Logistics' response contractor, Carolina Environmental Response Team (CERT), provide several large truck-mounted fans to help circulate air and reduce the ammonia concentration inside the facility. CERT placed the fans just outside the cargo bay doors to inject air and the back door was opened to vent the ammonia impacted air.

Air Monitoring

Tetra Tech START deployed air monitoring stations at various locations around the perimeter of the facility, based on wind direction, location of site personnel, and the proximity of the surrounding community. Air monitoring utilized AreaRAE Pros, with sensors for volatile organic compounds (VOC), hydrogen sulfide (H_2S), carbon monoxide (CO), ammonia (NH_3), lower explosive level (LEL), and oxygen (O_2), to record ambient air quality. Tetra Tech START selected the following locations:

- Location 1 – East, northeast of the Lineage Logistic facility and approximately halfway to the Pratt Industries facility.
- Location 2 – Just north of the Lineage Logistic facility and adjacent to the doorway used to vent the ammonia from the facility.
- Location 3 – Northwest of the Lineage Logistic facility off Lipton Lane, in a residential area downwind of the facility.

Tetra Tech START used a fourth AreaRAE Pro and MultiRAE Pro to monitor the staging area and to assess the potential for ammonia impacts to adjacent businesses, as requested.

Air monitoring results are discussed in the Result Summary section below and air monitoring locations are depicted on Figure 2 of Enclosure 1.

Water Quality and Sampling

In an effort to help reduce ammonia concentrations in the air, the local fire department sprayed water in the Lineage Logistic facility and in the ammonia venting area. On January 11th, 2020, EPA tasked Tetra Tech START to collect water quality readings and four surface water samples to determine if this water was impacted by the ammonia. Tetra Tech START collected water quality readings for conductivity pH, and temperature using a Horiba U52 water quality meter. Ammonia increases pH of water; therefore, pH was used as the main indicator for potential impacts to the retention pond and unnamed creek. Surface water pH results ranged from 6.94 at the furthest downstream location in the unnamed creek, to 8.78 at the point of discharge from the retention pond.

Tetra Tech START also collected co-located surface water samples with the water quality monitoring locations. Surface water samples were collected in accordance with EPA Region 4 Laboratory Services and Applied Science Division (LSASD) Field Branches Quality System and Technical Procedures (FBQSTP) for *Surface Water Sampling* (SESDPROC-201-R4), December 2016. Below is a brief summary of the surface water quality readings and sampling locations:

- Location 1 – At a stormwater outfall drain that discharged to a retention pond;

- Location 2 – A retention pond on the north side of the Lineage Logistic facility;
- Location 3 – At the retention pond outfall; and
- Location 4 – Approximately 1,000 feet down gradient of the retention pond and from an unnamed creek.

Surface water sample locations and surface water quality locations and data are provided on Figure 3 of Enclosure 1. Laboratory analytical results are discussed in the Results Summary section below.

RESULTS SUMMARY

This section provides a brief description of air monitoring results and laboratory analytical results for surface water samples.

Air Monitoring

Tetra Tech START collecting air monitoring data beginning on January 11, 2020 and continued through January 14, 2020. Below is a brief summary of ammonia detections at each location throughout the duration of monitoring activities:

- Location 1: No detectable concentrations of ammonia occurred at this location during air monitoring activities. The unit detected minimal concentrations of VOCs, as high as 0.284 parts per million (ppm).
- Location 2: Detectable concentrations of ammonia occurred at this location with concentrations ranging from below the instrument's detection level to 56 parts per million (ppm). Peak ammonia detections decreased each day with no detections on the last day of air monitoring (January 14, 2020). The unit detected minimal concentrations of VOCs, as high as 0.349 ppm.
- Location 3: No detectable concentrations of ammonia occurred at this location during air monitoring activities. The unit detected minimal concentrations of VOCs, as high as 0.582 ppm.

Tables 1 through 4 in Enclosure 2 provide the daily air monitoring data summary reports.

Surface Water Sampling

Tetra Tech START collected four surface water samples on January 11, 2020 and submitted them to Pace Analytical (Pace) in Huntersville, North Carolina for ammonia analysis. The table below provides a summary of ammonia detections for each sample:

Location	Sample ID	Ammonia (mg/L)
Location 1	LLAR-SW-01-011120	3.6
Location 2	LLAR-SW-02-011120	3.6
Location 3	LLAR-SW-03-011120	6.8
Location 4	LLAR-SW-04-011120	2.0

Notes:
LLAR – Lineage Logistics Ammonia Release
mg/L – Milligrams per liter
SW – Surface Water

Surface water sample locations are depicted on Figure 3 of Enclosure 1 and laboratory analytical results are provided Attachment 1.

If you have any questions or need additional copies of this report, please call me at (678) 775-3081.

Sincerely,

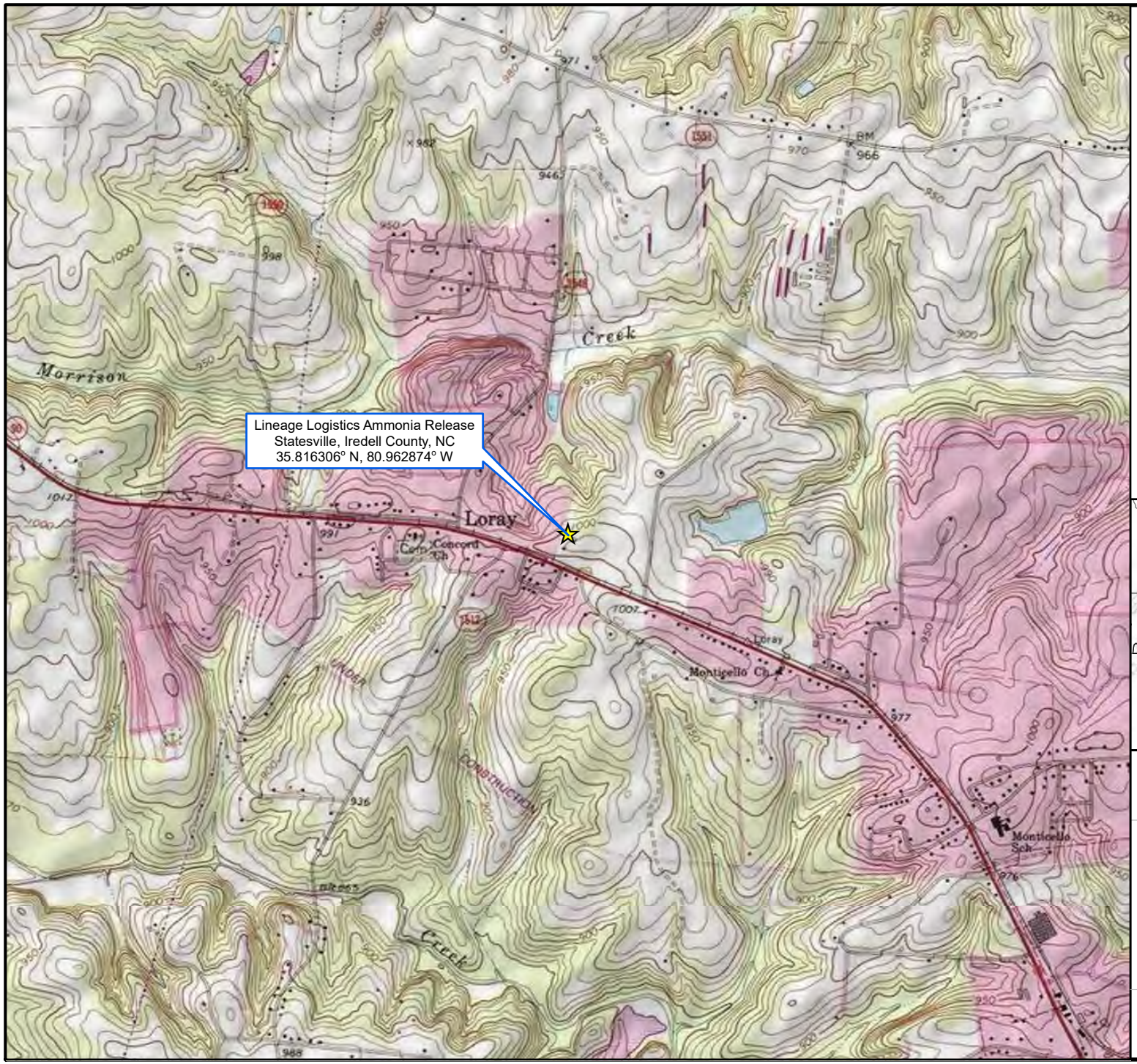
Christopher Jones
START IV Project Manager

Andrew F. Johnson
START IV Program Manager

Enclosures (5)

cc: Katrina Jones, EPA Project Officer
Angel Reed, START IV Document Control Coordinator

ENCLOSURE 1
FIGURES
(Three Pages)



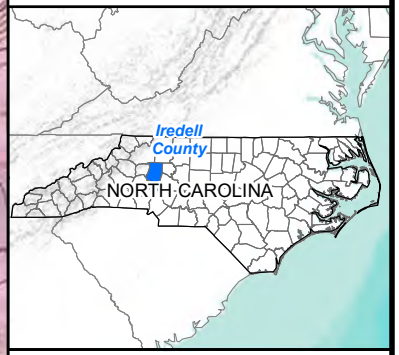
Legend

Site Location

N
W E
S

0 1,000 2,000
Feet

Map Source:
USGS Topographic Quadrangle,
Statesville West, NC



United States Environmental Protection Agency
Region 4

FIGURE 1

Site Location

Site Name: Lineage Logistics Ammonia Release

TOLIN No.: 82-007

City:	County:	State:
Statesville	Iredell	North Carolina

Date: 5/7/2020
Analyst: dale.vonbusch

File: C:\START_V\82-007_Lineage_Logistics_Ammonia_Release\mxd\site_location.mxd

Legend

- Air Monitoring Location
- Ammonia Venting Area

N
W E
S

0 200 400
Feet

United States Environmental Protection Agency
Region 4

FIGURE 2

Air Monitoring Locations

Site Name: Lineage Logistics Ammonia Release

TOLIN No.: 82-007

City:	County:	State:
Statesville	Iredell	North Carolina

Date: 5/7/2020
Analyst: dale.vonbusch

File: C:\START_V\82-007_Lineage_Logistics_Ammonia_Release\mxd\monitoring_locations.mxd

Legend

Water Quality Monitoring and Surface Water Sampling Location

N
W E
S

0 200 400
Feet

Notes:
Cond - Conductivity
LLAR - Lineage Logistics Ammonia Release
mS/cm - millisiemens per centimeter
pH - Expression of acidity or alkalinity
SW - Surface water
Temp - Temperature
°C - degrees celcius

Map Source:
Bing Maps Aerial Imagery, 2017.

United States Environmental Protection Agency Region 4

FIGURE 3

Water Quality Monitoring and Sampling Locations

Site Name: Lineage Logistics Ammonia Release

TOLIN No.: 82-007

City:	County:	State:
Statesville	Iredell	North Carolina

Date: 5/7/2020
Analyst: dale.vonbusch

File: C:\START_V\82-007_Lineage_Logistics_Ammonia_Release\mxd\water_quality.mxd

Table 4 - January 14, 2020 Air Monitoring Summary Table

The table below summarize monitoring data collected on using EPA's Viper wireless remote monitoring system.

Project Name: **Lineage Logistic Ammonia Release**

From: **1/14/20 12:00 AM** ***To:*** **1/14/20 1:22 PM**

Location 1 - East, Northeast of the Lineage Logistic Facility							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 1	VOC	No	770	587	0 - 132 ppb	11.3 ppb	1000 ppb
	CO	No	770	93	0 - 31 ppm	1.6 ppm	83 ppm
	H_2S	No	770	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	770	770	20.9 - 21.5 %	21.3 %	<19.5 or >23 %
	LEL	No	770	0	0 - 0 %	0 %	10 %
	NH_3	No	1540	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	770	770	2 - 3 µrem/h	2.1 µrem/h	6 µrem/h

Location 2 - Adjacent to the Ammonia Venting Area							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 2	VOC	No	755	6	0 - 20 ppb	0.1 ppb	1000 ppb
	CO	No	755	42	0 - 14 ppm	0.3 ppm	83 ppm
	H_2S	No	755	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	755	755	20.9 - 21.3 %	21.1 %	<19.5 or >23 %
	LEL	No	755	0	0 - 0 %	0 %	10 %
	NH_3	No	1510	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	755	755	2 - 3 µrem/h	2.3 µrem/h	6 µrem/h

Location 3 - Downwind Residential Neighborhood							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 3	VOC	No	759	733	0 - 389 ppb	247.6 ppb	1000 ppb
	CO	No	759	0	0 - 0 ppm	0 ppm	83 ppm
	H_2S	No	759	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	759	759	20.9 - 21.5 %	21.3 %	<19.5 or >23 %
	LEL	No	759	0	0 - 0 %	0 %	10 %
	NH_3	No	1518	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	759	759	1 - 2 µrem/h	1.6 µrem/h	6 µrem/h

Notes:

%	Percent
<	Less than
>	Greater than
AEGL	Acute Exposure Guideline Levels for Airborne Chemicals
PAC	Protective Action Criteria
ppb	Parts per billion
ppm	Parts per million
TEEL	Temporary Emergency Exposure Limit
µrem/h	Microrem per hour
γ	Gamma-wave radiation

Analyte	Definition	Action Level Reference
VOC	Volatile Organic Compounds	TEEL-0,15 minute TWA for Benzene
CO	Carbon Monoxide	AEGL-2 1hr
H2S	Hydrogen Sulfide	AEGL-1 1hr
O2	Oxygen	29 CFR 1910.146, Confined Spaces
LEL	Lower Explosive Limit	29 CFR 1910.146, Confined Spaces
NH3	Ammonia	AEGL-1 1hr
γ	Gamma-wave Radiation	Lowest 3x median (background) for RAEs in period

ENCLOSURE 2
SUMMARY RESULTS AND DATA TABLES
(Four Pages)

Table 1 - January 11, 2020 Air Monitoring Summary Table

The table below summarize monitoring data collected on using EPA's Viper wireless remote monitoring system.

Project Name: **Lineage Logistic Ammonia Release**

From: **1/11/20 12:48 PM** ***To:*** ***1/11/20 11:59 PM***

Location 1 - East, Northeast of the Lineage Logistic Facility							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 1	VOC	No	700	0	0 - 0 ppb	0 ppb	1000 ppb
	CO	No	700	0	0 - 0 ppm	0 ppm	83 ppm
	H_2S	No	700	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	700	700	20.5 - 20.7 %	20.6 %	<19.5 or >23 %
	LEL	No	700	700	2 - 3 %	3 %	10 %
	NH_3	No	1400	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	700	700	2 - 2 µrem/h	2 µrem/h	6 µrem/h

Location 2 - Adjacent to the Ammonia Venting Area							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 2	VOC	No	705	705	16 - 349 ppb	63 ppb	1000 ppb
	CO	No	705	44	0 - 8 ppm	0.2 ppm	83 ppm
	H_2S	No	705	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	705	705	20.9 - 20.9 %	20.9 %	<19.5 or >23 %
	LEL	No	705	0	0 - 0 %	0 %	10 %
	NH_3	Yes	1410	1410	2 - 56 ppm	9.4 ppm	30 ppm
	γ	No	705	705	2 - 2 µrem/h	2 µrem/h	6 µrem/h

Location 3 - Downwind Residential Neighborhood							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 3	VOC	No	698	130	0 - 298 ppb	7.4 ppb	1000 ppb
	CO	No	698	2	0 - 2 ppm	0 ppm	83 ppm
	H_2S	No	698	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	698	698	20.9 - 20.9 %	20.9 %	<19.5 or >23 %
	LEL	No	698	0	0 - 0 %	0 %	10 %
	NH_3	No	1396	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	698	698	1 - 2 µrem/h	1.1 µrem/h	6 µrem/h

Notes:

%	Percent
<	Less than
>	Greater than
AEGL	Acute Exposure Guideline Levels for Airborne Chemicals
PAC	Protective Action Criteria
ppb	Parts per billion
ppm	Parts per million
TEEL	Temporary Emergency Exposure Limit
µrem/h	Microrem per hour
γ	Gamma-wave radiation

Analyte	Definition	Action Level Reference
VOC	Volatile Organic Compounds	TEEL-0,15 minute TWA for Benzene
CO	Carbon Monoxide	AEGL-2 1hr
H2S	Hydrogen Sulfide	AEGL-1 1hr
O2	Oxygen	29 CFR 1910.146, Confined Spaces
LEL	Lower Explosive Limit	29 CFR 1910.146, Confined Spaces
NH3	Ammonia	AEGL-1 1hr
γ	Gamma-wave Radiation	3x manually defined background

Table 2 - January 12, 2020 Air Monitoring Summary Table

The table below summarize monitoring data collected on using EPA's Viper wireless remote monitoring system.

Project Name: **Lineage Logistic Ammonia Release**

From: **1/12/20 12:00 AM** ***To:*** ***1/12/20 11:59 PM***

Location 1 - East, Northeast of the Lineage Logistic Facility							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 1	VOC	No	967	627	0 - 83 ppb	8.7 ppb	1000 ppb
	CO	No	967	28	0 - 41 ppm	0.4 ppm	83 ppm
	H_2S	No	967	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	967	967	20.7 - 21.4 %	20.9 %	<19.5 or >23 %
	LEL	No	967	140	0 - 3 %	0.3 %	10 %
	NH_3	No	1934	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	967	967	1 - 3 µrem/h	2.1 µrem/h	6 µrem/h

Location 2 - Adjacent to the Ammonia Venting Area							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 2	VOC	No	961	514	0 - 151 ppb	12.8 ppb	1000 ppb
	CO	No	961	78	0 - 36 ppm	1 ppm	83 ppm
	H_2S	No	961	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	961	961	20.9 - 21.4 %	21.2 %	<19.5 or >23 %
	LEL	No	961	0	0 - 0 %	0 %	10 %
	NH_3	No	1922	244	0 - 8 ppm	0.3 ppm	30 ppm
	γ	No	961	961	2 - 3 µrem/h	2 µrem/h	6 µrem/h

Location 3 - Downwind Residential Neighborhood							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 3	VOC	No	973	844	0 - 546 ppb	188.8 ppb	1000 ppb
	CO	No	973	7	0 - 6 ppm	0 ppm	83 ppm
	H_2S	No	973	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	973	973	20.9 - 20.9 %	20.9 %	<19.5 or >23 %
	LEL	No	973	0	0 - 0 %	0 %	10 %
	NH_3	No	1946	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	973	973	1 - 2 µrem/h	1 µrem/h	6 µrem/h

Notes:

%	Percent
<	Less than
>	Greater than
AEGL	Acute Exposure Guideline Levels for Airborne Chemicals
PAC	Protective Action Criteria
ppb	Parts per billion
ppm	Parts per million
TEEL	Temporary Emergency Exposure Limit
µrem/h	Microrem per hour
γ	Gamma-wave radiation

Analyte	Definition	Action Level Reference
VOC	Volatile Organic Compounds	TEEL-0,15 minute TWA for Benzene
CO	Carbon Monoxide	AEGL-2 1hr
H2S	Hydrogen Sulfide	AEGL-1 1hr
O2	Oxygen	29 CFR 1910.146, Confined Spaces
LEL	Lower Explosive Limit	29 CFR 1910.146, Confined Spaces
NH3	Ammonia	AEGL-1 1hr
γ	Gamma-wave Radiation	3x manually defined background

Table 3 - January 13, 2020 Air Monitoring Summary Table

The table below summarize monitoring data collected on using EPA's Viper wireless remote monitoring system.

Project Name: **Lineage Logistic Ammonia Release**

From: **1/13/20 12:00 AM** ***To:*** ***1/13/20 11:59 PM***

Location 1 - East, Northeast of the Lineage Logistic Facility							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 1	VOC	No	1420	1345	0 - 284 ppb	15.1 ppb	1000 ppb
	CO	No	1420	192	0 - 78 ppm	1.8 ppm	83 ppm
	H_2S	No	1420	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	1420	1420	20.9 - 21.6 %	21.3 %	<19.5 or >23 %
	LEL	No	1420	0	0 - 0 %	0 %	10 %
	NH_3	No	2840	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	1420	1420	2 - 3 µrem/h	2 µrem/h	6 µrem/h

Location 2 - Adjacent to the Ammonia Venting Area							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 2	VOC	No	1427	655	0 - 31 ppb	4.8 ppb	1000 ppb
	CO	No	1427	97	0 - 21 ppm	0.4 ppm	83 ppm
	H_2S	No	1427	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	1427	1427	20.9 - 21.3 %	21.2 %	<19.5 or >23 %
	LEL	No	1427	0	0 - 0 %	0 %	10 %
	NH_3	No	2854	24	0 - 1 ppm	0 ppm	30 ppm
	γ	No	1427	1427	2 - 3 µrem/h	2 µrem/h	6 µrem/h

Location 3 - Downwind Residential Neighborhood							
Instrument	**Analyte**	**Action Level Exceedance?**	**Number of Readings**	**Number of Detections**	**Concentration Range**	**Period Average**	**Action Level**
AreaRAE 3	VOC	No	1419	1412	0 - 582 ppb	218 ppb	1000 ppb
	CO	No	1419	37	0 - 9 ppm	0.1 ppm	83 ppm
	H_2S	No	1419	0	0 - 0 ppm	0 ppm	0.51 ppm
	O_2	No	1419	1419	20.9 - 21.5 %	21.3 %	<19.5 or >23 %
	LEL	No	1419	0	0 - 0 %	0 %	10 %
	NH_3	No	2838	0	0 - 0 ppm	0 ppm	30 ppm
	γ	No	1419	1419	1 - 2 µrem/h	1.2 µrem/h	6 µrem/h

Notes:

%	Percent
<	Less than
>	Greater than
AEGL	Acute Exposure Guideline Levels for Airborne Chemicals
PAC	Protective Action Criteria
ppb	Parts per billion
ppm	Parts per million
TEEL	Temporary Emergency Exposure Limit
µrem/h	Microrem per hour
γ	Gamma-wave radiation

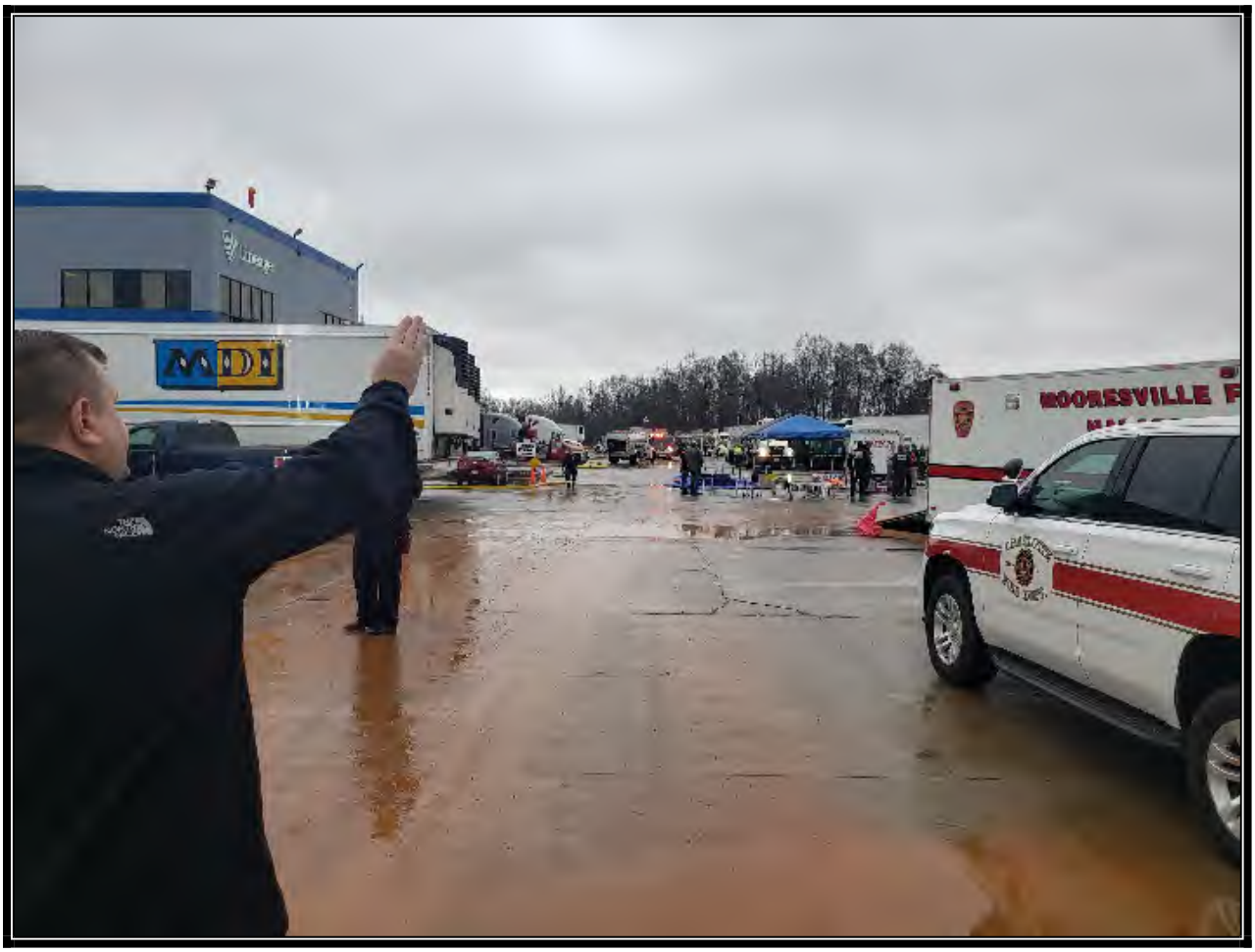
Analyte	Definition	Action Level Reference
VOC	Volatile Organic Compounds	TEEL-0,15 minute TWA for Benzene
CO	Carbon Monoxide	AEGL-2 1hr
H2S	Hydrogen Sulfide	AEGL-1 1hr
O2	Oxygen	29 CFR 1910.146, Confined Spaces
LEL	Lower Explosive Limit	29 CFR 1910.146, Confined Spaces
NH3	Ammonia	AEGL-1 1hr
γ	Gamma-wave Radiation	3x manually defined background

ENCLOSURE 3
PHOTOGRAPHIC LOG
(Eight Pages)

OFFICIAL PHOTOGRAPH NO. 1
U.S. ENVIRONMENTAL PROTECTION AGENCY

TOLIN:	82-007	**Location:**	Lineage Logistics Ammonia Release
Orientation:	Northwest	**Date:**	January 11, 2020
Photographer:	Robert Shuster, Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START)	**Witness:**	Chris Jones, Tetra Tech START

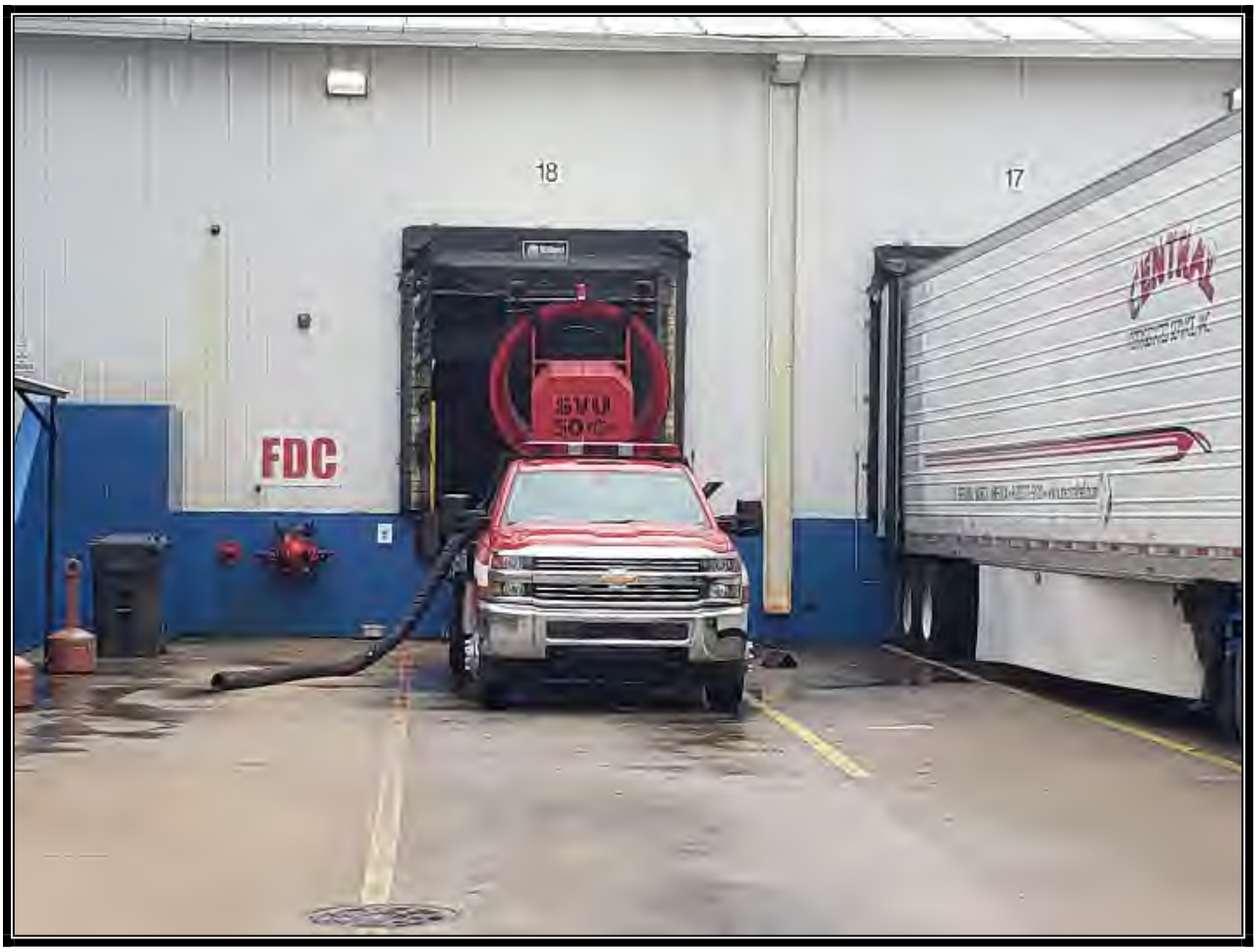
Subject: On the evening of Friday, January 10, 2020, the Linage Logistics facility had a release of anhydrous ammonia from a cooling system used at the Lineage Logistics warehouse in Statesville, Iredell County, North Carolina.



OFFICIAL PHOTOGRAPH NO. 2
U.S. ENVIRONMENTAL PROTECTION AGENCY

TOLIN:	82-007	**Location:**	Lineage Logistics Ammonia Release
Orientation:	North	**Date:**	January 11, 2020
Photographer:	Robert Shuster, Tetra Tech START	**Witness:**	Chris Jones, Tetra Tech START

Subject: On January 11, 2020, Tetra Tech START mobilized and arrived onsite to support emergency response activities including air monitoring, water sampling, and documentation of response activities. Local police and fire department personnel were already onsite actively supporting response activities when Tetra Tech START arrived.



OFFICIAL PHOTOGRAPH NO. 3
U.S. ENVIRONMENTAL PROTECTION AGENCY

TOLIN Number:	82-007	**Location:**	Lineage Logistics Ammonia Release
Orientation:	West	**Date:**	January 11, 2020
Photographer:	Robert Shuster, Tetra Tech START	**Witness:**	Chris Jones, Tetra Tech START
Subject:	Responders used large fans to inject fresh air into the facility, via cargo bay doors located on the eastern portion of the warehouse, to dilute and ventilate the anhydrous ammonia gas from the warehouse.		

OFFICIAL PHOTOGRAPH NO. 4
U.S. ENVIRONMENTAL PROTECTION AGENCY

TOLIN Number:	82-007	**Location:**	Lineage Logistics Ammonia Release
Orientation:	West	**Date:**	January 11, 2020
Photographer:	Robert Shuster, Tetra Tech START	**Witness:**	Chris Jones, Tetra Tech START
Subject:	Responders opened a service door, located at the northwestern corner of the warehouse, to ventilate the anhydrous ammonia gas from the warehouse.		

OFFICIAL PHOTOGRAPH NO. 5
U.S. ENVIRONMENTAL PROTECTION AGENCY

TOLIN Number:	82-007	**Location:**	Lineage Logistics Ammonia Release
Orientation:	Southwest	**Date:**	January 11, 2020
Photographer:	Robert Shuster, Tetra Tech START	**Witness:**	Chris Jones, Tetra Tech START

Subject: Tetra Tech START conducted air monitoring at three locations during emergency response activities using AreaRAE Pros and the Viper telemetry data collection system. Tetra Tech START established Location 1 approximately 500 feet northeast of the Lineage Logistic facility, in between the facility and an active business to the northeast.

OFFICIAL PHOTOGRAPH NO. 6
U.S. ENVIRONMENTAL PROTECTION AGENCY

TOLIN Number:	82-007	**Location:**	Lineage Logistics Ammonia Release
Orientation:	West	**Date:**	January 11, 2020
Photographer:	Robert Shuster, Tetra Tech START	**Witness:**	Chris Jones, Tetra Tech START
Subject:	Tetra Tech START established Location 2, near the ammonia venting area.		

OFFICIAL PHOTOGRAPH NO. 7
U.S. ENVIRONMENTAL PROTECTION AGENCY

TOLIN Number:	8282-007	**Location:**	Lineage Logistics Ammonia Release
Orientation:	North	**Date:**	January 11, 2020
Photographer:	Robert Shuster, Tetra Tech START	**Witness:**	Chris Jones, Tetra Tech START

Subject: Tetra Tech START collected surface water sample LLAR-SW-02-011120 from the onsite retention pond which was analyzed by a Tetra Tech-procured laboratory for ammonia. Results at this location detected ammonia at 3.6 milligrams per liter (mg/L).

OFFICIAL PHOTOGRAPH NO. 8
U.S. ENVIRONMENTAL PROTECTION AGENCY

TOLIN Number:	8282-007	**Location:**	Lineage Logistics Ammonia Release
Orientation:	Southwest	**Date:**	January 11, 2020
Photographer:	Chris Jones, Tetra Tech START	**Witness:**	Robert Shuster

Subject: Tetra Tech START collected surface water sample LLAR-SW-01-011120 from the storm drain outlet which was analyzed by a Tetra Tech-procured laboratory for ammonia. Results at this location detected ammonia at 3.6 mg/L.

ENCLOSURE 4
FIELD LOGBOOK NOTES
(Six Pages)

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Lineage Logistics
Ammonia Release

1 of 1

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Rite in the Rain

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Name _____

_____

Address _____

_____

Phone _____

Project _____

_____

_____

_____

RiteintheRain.com

CONTENTS

PAGE	REFERENCE	DATE

Saturday 1/11/20

940 - TT Jones/Shuster on site. Met w/ OSC discussed tasks

1000 - Scout locations for air monitoring equipment — instruments were calibrated last night — 1/10/20

1045 - deployed AreaRAE #9 @ location 1

" AreaRAE #10 @ location 2

1215 - boyfriend of owner (Amber Breathitt) has given verbal permission for access to property @ 122 Lipton Ln.

1225 - AreaRAE # 11 to Location 3

1235 - All 3 locations are up and running w/ an antenna located at point A. beginning Viper run.

1305 - moved AReaRAE #10 closer to vapor exit point 35.6171403, -80.9623406

1345 - Bump test H_2O quality meter. 4.0 ph test solution read 3.95ph

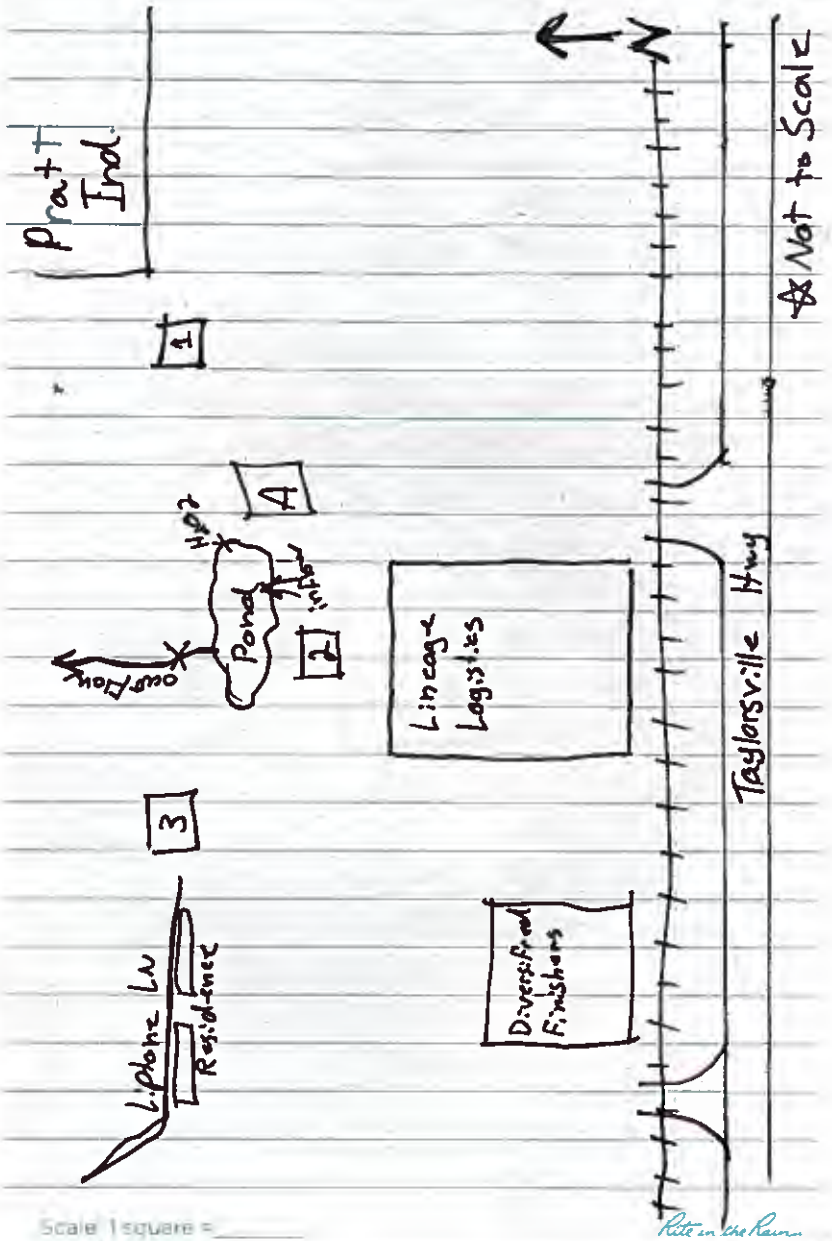
1356 - water sample 1 taken at retention pond inflow ph-7.49

1405 - water sample 2 taken ½ way around pond between inflow and outlet ph-8.71

1414 - water sample 3 taken at pond outflow ph-8.78

1532 - water sample 4 taken downstream off pond.

Scale: 1 square = _____



Scale: 1 square = _____

Rite in the Rain

1730 No NH_3 detections at the two off site locations. Location 2, adjacent to vent area, continues to have hits b/t 10 - 50 ppm.

- Meet w/ Barry Love w/ NC DENR to show where TT collected water quality readings and surface water samples.

1820 Back on site

1900 Refuel generators

1950 - off site. Locations 1 and 3 as well as the antenna have generators location 2 is on batt

RS

740 - On site, gateway went down @ 1am. begain trouble shooting to get gateway back online

755 - gateway back online refilled generators and moved their locations generators are now @ antenna and location 2

850 - Bump test/calibrated area RAE #11 at location 3. had to re-cal ammonia sensor but all others passed

940 - bump testing remaining Area RAE units at locations 1 and 2

1015 - during bump testing, data streaming was turned off for each instrument while being tested. this will cause intermittent gabs in data during this time.

1844 - refilled generators and moved their locations for overnight. generators are at location 2, 3, and at the antenna. then off site

RS

Monday 12/3/18

808- before heading "on site" took generator from location 3 and bump tested the Area RAE at that location. All sensors passed bump test.

820- on site

835- unit 9 from location 1 offline and moved to be used for walkthrough of adjacent buisness. unit bump tested.

855- spoke with president of adjacent buisness (Kenny Barnes) who gave verbal permisson for walk through of property. Amonnia was not detected @ any location on this walkthrough

910- Back on site to replace AreaRAE #9 to location 1, and bump test AreaRAE at location 2

1130- requested data dump from ERT To create data summary tables for sat and sunday from 8am - 8pm.

1224 - SW samples picked up by Currious From Pace to be taken to Lab

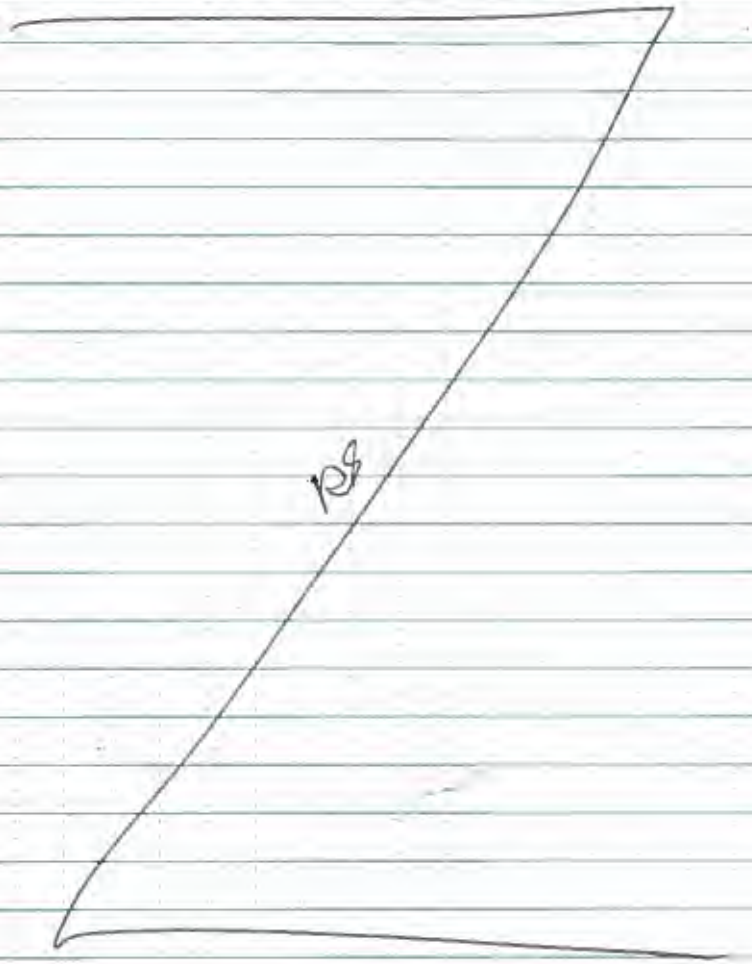
1430- Update - Layers of ice on the floor have prevented the movement of product. Recharging Ammonia

Scale: 1 square =_____

Lines has been postponed until tomorrow.

1730- began refuelling generators and placing them on Locations 1 and 3

1800- off site



Scale: 1 square =_____

Rite in the Rain

Tuesday 1/14/20

815 - On site, took generator from location 3 and calibrated AreaRAE

835 - calibrated AreaRAE at location 1 and 2, moved generator from 1→2

1000 - Begain making data summary table for 8am 1/13/20 to 8am 1/14/20

1100 - Fire department updated that their highest ammonia lvl detected today so far is 58. An attempt to recharge the ammonia lines is being made and an entry will be made by the fire dept at 1300 to measure levls insid building

1320 - received word from fire dept. after their walkthrough. no elevated levels were detected. therefore EPA support was no longer needed and we begain breaking down air monitoring stations

1433 - eff site

RS

Scale: 1 square = _____

RS

Done

Scale: 1 square = _____

ENCLOSURE 5
DATA VALIDATION
(11 Pages)

DATA VALIDATION CHECKLIST – STAGE 3
EPA REGION 4 START CONTRACT

Site Name	Lineage Logistics Ammonia	**TO/TOLIN No.**	68HE0419F0082/82-007
Data Reviewer (signature and date)	Leslie Shaw February 19, 2020	**Technical Reviewer (signature and date)**	Jessica A. Vickers March 5, 2020
Laboratory Report No.	VA14005	**Laboratory**	Shealy Environmental Services, Inc./West Columbia, SC
Analyses	Ammonia nitrogen by EPA Method 350.1		
Samples and Matrix	Four water samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 3 validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the Tetra Tech *Quality Assurance Project Plan, Superfund Technical Assessment and Response Team (START V), EPA Region 4, Revision 1* (September 2019) and the EPA *National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection of data was required for this data package. The results may be used as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
N	The laboratory data package did not report results down to the method detection limit (MDL) and did not provide the MDL value. Tetra Tech contacted the laboratory and received the MDL value used for this data via email. Reissuing of the data package was not deemed necessary because all sample results were reported at values above the reporting limit.

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
N	The laboratory reported that custody seals were not present on the sample shipping container. No qualifications were applied for this field error. The samples were transferred from the North Carolina facility to the South Carolina facility for analysis. During receipt at the North Carolina facility, the samples' pH for all samples was verified to be less than 2. The South Carolina facility found the pH to be greater than 2 and subsequently laboratory personnel chemically preserved each of the four samples with 2.5 mL of sulfuric acid solution. Because of the potential for the analyte, to escape from the media, the ammonia – N (gas diffusion) results for all four samples were qualified as estimated with a potential low bias (flagged J-).

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
NA	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	

Method blanks:

Within Criteria	Exceedance/Notes
Y	

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
NA	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	MS/MSD results for samples not associated with this project were not evaluated.

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Y	

Sample dilutions:

Within Criteria	Exceedance/Notes
Y	Sample LLAR-SW-03-011120 was analyzed at a 2-fold dilution.

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
NA	

Target analyte identification:

Within Criteria	Exceedance/Notes
Y	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Y	

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

STAGE 3/4 DATA VALIDATION CHECKLIST FOR RECALCULATIONS

Data Package Number: VA 14005

Validation Element	Objective	Sample ID, Run Date, and Run Time	Results (include units) and Notes (Use check mark to indicate correct result; include hand-calculated result if performed)
Initial Calibration	Confirm (in ICP raw data) that an initial calibration begins each analytical sequence, before all QC or env. samples are analyzed, using the correct number of standards (and calibration blank, if required).	1/14/2020 ; 1134 - 1280	6 ICAL (0, 0.1, 0.25, 0.5, 1.0, 5.0), rinse, ICV, ICB, LOQ (0.1 mg/L), samples, rinse, CCV, CCB, not our sample, rinse, CCV, CCB, dilute (x2)/our sample, rinse, CCV, CCB ✓
	Confirm (in ICP raw data) that an initial calibration occurs at the required frequency.		✓
response - offset / RF. = results	Confirm that initial calibration criteria are met. Spot-recalculate initial calibration results.	ICAL 0.5 AM20-8, 01/14/2020 11:44	896,433.4 - 28051.7 / 1.762762 x 10^6 = 0.49262 (11) 0.5000

Recalculate at least one result (and %R or %D values, as appropriate) from each of the following QC samples and environmental samples, and compare your calculated results with the results the laboratory reports on their summary forms found earlier in the data package. They should agree. If they do not, then there may be problems with the package and further review is required. Note that for some QC samples, your comparison may mean simply confirming that the result reported in the summary form matches the result in the raw data – there may not be any calculation.

SHOW ALL WORK FOR RECALCULATIONS

ICV	Check result	ICV 1.0 AM20-11	100%, 0.9965 mg/L
	Recalculate one %R	1/14/2020, 1152	**Calculated result:*** 0.9965 / 1.000 x 100% = 99.65% ✓
ICB	Check result	ICB - AM20-5 1/14/2020, 1154	58534.0 - 28051.7 / 1.762762 x 10^6 = 0.01729 ✓

STAGE 3/4 DATA VALIDATION CHECKLIST FOR RECALCULATIONS

Data Package Number: VA 14005

Validation Element	Objective	Sample ID, Run Date, and Run Time	Results (include units) and Notes (Use check mark to indicate correct result; include hand-calculated result if performed)
CRDL Check Standard	Check result	LOQ 0.1 MG/L AM20-6	2020012 - 28051.7 / 1.762762 x10^6 = 0.09868 ✓
	Recalculate one %R	1/14/2020, 1156	**Calculated result:*** 0.0987 / 0.100 x100 = 98.7% ✓
An opening CCV applicable to our samples	Check result	CCV	178·3058.5 - 28051.7 / 1.762762x10^6 = 0.9956 ✓
	Recalculate one %R	1/14/2020, 1216	**Calculated result:*** 0.9956 / 1.000 x100 = 99.56% ✓
A closing CCV applicable to our samples	Check result	CCV	1795352.5 - 28051.7 / 1762762x10^6 = 1.00257 ✓
	Recalculate one %R	1/14/20, 1232	**Calculated result:*** 1.0026 / 1.000 x100 = 100.26% ✓
An opening CCB applicable to our samples	Check result	CCB, 1/14/2020, 1218	66290.8 - 28051.7 / 1.762762x10^6 = 0.02169 ✓
A closing CCB applicable to our samples	Check result	CCB, 1/14/2020, 1234	71045.6 - 28051.7 / 1.762762 x10^6 = 0.02439 ✓
Method blank	Check result	VQ41785-01, 1/14/2020 1158	**Calculated result:*** 51193.8 - 28051.7 / 1.762762x10^6 = 0.013128 ✓
ICSA sample	Check result		NA
	Recalculate one %R		**Calculated result:***** NA
ICSAB sample	Check result		NA
	Recalculate one %R		**Calculated result:***** NA

STAGE 3/4 DATA VALIDATION CHECKLIST FOR RECALCULATIONS

Data Package Number: VA 14005

Validation Element	Objective	Sample ID, Run Date, and Run Time	Results (include units) and Notes (Use check mark to indicate correct result; include hand-calculated result if performed)
MS	Check result		**Calculated result:*** NA
	Recalculate one %R		**Calculated result:****** NA.
MSD	Check result		**Calculated result:*** NA
	Recalculate one %R		**Calculated result:****** NA
	Recalculate one RPD value between MS and MSD		**Calculated result:** NA
Post-digestion spike	Check result		NA
	Recalculate one %R		**Calculated result:****** NA
LCS	Check result	VQ41785-002	**Calculated result:*** 1688488.9 - 28051.7 / 1.762762X10^6 = 0.9419 ✓
	Recalculate one %R	1/14/2020, 1200	**Calculated result:***** 0.9420 / 1.000 X100 = 94.20% ✓
Serial Dilution	Check result		**Calculated result:**** NA
	Recalculate one percent difference value		**Calculated result:** NA
Sample result for VA 14005-002	Check result	1/14/202, 1109	**Calculated result:*** 6291957.8 - 28051.7 / 1.762762X10^6 = 3.55346 ✓

Formulas:

* Conc. (mg/kg) = {(Raw Conc. in ug/L) x (Vol. in L) x DF} / {(Sample mass in kg) x (fractional solids) x (1000)}

** Serial dilution conc. (ug/L) = (Raw Conc. in ug/L) x (DF, typically 5)

STAGE 3/4 DATA VALIDATION CHECKLIST FOR RECALCULATIONS

Data Package Number: VA14005

Validation Element	Objective	Sample ID, Run Date, and Run Time	Results (include units) and Notes (Use check mark to indicate correct result; include hand-calculated result if performed)

*** %R = [(Measured Value) / (True Value)] x 100

**** %R = {(Spike sample result) - (Sample result)} / (Spike added)} x 100

RPD = [(A-B) / {(A + B)/2}] x 100

Percent difference = [(Original Result - Diluted Result) / Original Result] x 100

LINEAGE LOGISTICS AMMONIA AQUEOUS ANALYTICAL RESULTS SUMMARY
SHEALY ENVIRONMENTAL SERVICES, INC. REPORT NO. VA14005

Sample ID	Analyte	Lab Results	Lab Quals	RL	Units	Val Results	Val Quals
LLAR-SW-01-011120	Ammonia - N (gas diffusion)	3.6		0.10	mg/L	3.6	J-
LLAR-SW-02-011120	Ammonia - N (gas diffusion)	3.6		0.10	mg/L	3.6	J-
LLAR-SW-03-011120	Ammonia - N (gas diffusion)	6.8		0.20	mg/L	6.8	J-
LLAR-SW-04-011120	Ammonia - N (gas diffusion)	2.0		0.10	mg/L	2.0	J-

ATTACHMENT 1
LABORATORY ANALYTICAL DATA PACKAGE
(20 Pages)

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

January 15, 2020

Jessica Vickers
Tetra Tech
950 South 4th Street
Baldwyn, MS 38824

RE: Project: Ammonia
Pace Project No.: 92460451

Dear Jessica Vickers:
Enclosed are the analytical results for sample(s) received by the laboratory on January 13, 2020. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: Ammonia
Pace Project No.: 92460451

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92460451001	**LLAR-SW-01-011120**	Water	01/11/20 13:58	01/13/20 12:24
92460451002	**LLAR-SW-02-011120**	Water	01/11/20 14:05	01/13/20 12:24
92460451003	**LLAR-SW-03-011120**	Water	01/11/20 14:14	01/13/20 12:24
92460451004	**LLAR-SW-04-011120**	Water	01/11/20 15:32	01/13/20 12:24

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project:
Pace Project No.:

Method:
Description:
Client:
Date:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical®	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: TetraTech

Project #: WO#: 92460451

92460451

Courier: ☐ Commercial ☑ Pace ☐ Fed Ex ☐ UPS ☐ USPS ☐ Other: ☐ Client

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: EH 1-13-20

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☑ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

Thermometer: ☑ IR Gun ID: 92T058 **Type of Ice:** ☑ Wet ☐ Blue ☐ None

Cooler Temp (°C): 1.1 **Correction Factor:** Add/Subtract (°C) 0.0°C

Cooler Temp Corrected (°C): 1.1

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested? EH 1-13-20	☑ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used? EH 1-13-20	☑ Yes	☑ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☐ No	☑ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☐ No	☑ N/A	10.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	11.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: Date/Time:

Project Manager SCURF Review: NMG **Date:** 1/14/20

Project Manager SRF Review: NMG **Date:** 1/14/20

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project # **WO# : 92460451**

PM: PTE Due Date: 01/15/20

CLIENT: 92-TETRA GA

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1																									1			
2																									1			
3																									1			
4																									1			
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

ANALYTICAL ENVIRONMENTAL SERVICES, INC.
3080 Presidential Drive Atlanta, GA 30340-3704
Phone: (770) 457-8177 / Toll-Free: (800) 972-4889 / Fax: (770) 457-8188

CHAIN OF CUSTODY

Work Order: _____

Date: _____ Page _____ of _____

COMPANY: Tetra Tech

ADDRESS: 1955 Evergreen Blvd. Duluth GA 30096

PHONE: 678-775-3094

EMAIL: Jessica.Vickers@Tetra Tech.com

SAMPLED BY: Hal Jones

SIGNATURE:

#	SAMPLE ID	SAMPLED: DATE	SAMPLED: TIME	GRAB	COMPOSITE	MATRIX (see codes)	PRESERVATION (see codes)	REMARKS	Number of Containers
1	LL4R-SW-01-011120	1/11/20	1358	✓			✓	92460451	
2	LL4R-SW-02-011120	1/11/20	1405	✓			✓	001	
3	LL4R-SW-03-011120	1/11/20	1414	✓			✓	002	
4	LL4R-SW-04-011120	1/11/20	1532	✓			✓	003	
5								004	
6									
7									
8									
9									
10									
11									
12									
13									
14									

ANALYSIS REQUESTED: Ammonia

Visit our website www.aesatlanta.com for downloadable COCs and to log in to your AESAccess account.

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1.	1/13/20 12:24	1.	1221
2.	1/13/20 1345	2. Erick Glasscock Pace	1345
3.		3.	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT: / / VIA:
IN: / / VIA:
client FedEx UPS US mail courier Greyhound
other: _____

PROJECT INFORMATION
PROJECT NAME: Lineage Logistics Ammonia Release
PROJECT #:
SITE ADDRESS:
SEND REPORT TO: Jessica.Vickers@Tetra Tech.com
INVOICE TO:
(IF DIFFERENT FROM ABOVE)
QUOTE #: _____ PO#: _____

RECEIPT
Total # of Containers

Turnaround Time (TAT) Request
☐ Standard 5 Business Days
☐ 2 Business Day Rush
☐ Next Business Day Rush
☐ Same-Day Rush (auth req.)
☑ Other ASAP

STATE PROGRAM (if any): _____
E-mail? ☐ Fax? ☐
DATA PACKAGE: I ○ II ○ III ○ IV ○

Submission of samples to the laboratory constitutes acceptance of AES's Terms & Conditions. Samples received after 3PM or on Saturday are considered as received the following business day. If no TAT is marked on COC, AES will proceed with standard TAT. Samples are disposed of 30 days after completion of report unless other arangements are made.

Matrix Codes: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Waste Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify)

Preservative Codes: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Pace Analytical Services, Inc.
9800 Kincey Avenue
Suite 100
Huntersville, NC 28078
Attention: Taylor Ezell

Project Name: Ammonia

Project Number: 92460451

Lot Number:**VA14005**

Date Completed:01/14/2020

01/15/2020 9:28 AM
Approved and released by:
Project Manager: Cathy S. Dover

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Case Narrative
Pace Analytical Services, Inc.
Lot Number: VA14005

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Sample Summary
Pace Analytical Services, Inc.
Lot Number: VA14005
Project Name: Ammonia
Project Number: 92460451

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	LLAR-SW-01-011120	Aqueous	01/11/2020 1358	01/14/2020
002	LLAR-SW-02-011120	Aqueous	01/11/2020 1405	01/14/2020
003	LLAR-SW-03-011120	Aqueous	01/11/2020 1414	01/14/2020
004	LLAR-SW-04-011120	Aqueous	01/11/2020 1532	01/14/2020

(4 samples)

Detection Summary

Pace Analytical Services, Inc.

Lot Number: VA14005

Project Name: Ammonia

Project Number: 92460451

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	LLAR-SW-01-011120	Aqueous	Ammonia - N (gas	350.1	3.6		mg/L	5
002	LLAR-SW-02-011120	Aqueous	Ammonia - N (gas	350.1	3.6		mg/L	6
003	LLAR-SW-03-011120	Aqueous	Ammonia - N (gas	350.1	6.8		mg/L	7
004	LLAR-SW-04-011120	Aqueous	Ammonia - N (gas	350.1	2.0		mg/L	8

(4 detections)

Inorganic non-metals

Client: **Pace Analytical Services, Inc.** Laboratory ID: **VA14005-001**

Description: **LLAR-SW-01-011120** Matrix: **Aqueous**

Date Sampled: **01/11/2020 1358** Project Name: **Ammonia**

Date Received: **01/14/2020** Project Number: **92460451**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	350.1	(Ammonia - N) 350.1	1	01/14/2020 1202	DMA		41785

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Ammonia - N (gas diffusion)		**350.1**	**3.6**		**0.10**	**mg/L**	**1**

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Inorganic non-metals

Client: **Pace Analytical Services, Inc.** Laboratory ID: **VA14005-002**

Description: **LLAR-SW-02-011120** Matrix: **Aqueous**

Date Sampled: **01/11/2020 1405** Project Name: **Ammonia**

Date Received: **01/14/2020** Project Number: **92460451**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	350.1	(Ammonia - N) 350.1	1	01/14/2020 1204	DMA		41785

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Ammonia - N (gas diffusion)		**350.1**	**3.6**		**0.10**	**mg/L**	**1**

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Inorganic non-metals

Client: **Pace Analytical Services, Inc.** Laboratory ID: **VA14005-003**

Description: **LLAR-SW-03-011120** Matrix: **Aqueous**

Date Sampled: **01/11/2020 1414** Project Name: **Ammonia**

Date Received: **01/14/2020** Project Number: **92460451**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	350.1	(Ammonia - N) 350.1	2	01/14/2020 1228	DMA		41785

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Ammonia - N (gas diffusion)		**350.1**	**6.8**		**0.20**	**mg/L**	**1**

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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Inorganic non-metals

Client: **Pace Analytical Services, Inc.** Laboratory ID: **VA14005-004**

Description: **LLAR-SW-04-011120** Matrix: **Aqueous**

Date Sampled: **01/11/2020 1532** Project Name: **Ammonia**

Date Received: **01/14/2020** Project Number: **92460451**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	350.1	(Ammonia - N) 350.1	1	01/14/2020 1208	DMA		41785

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
Ammonia - N (gas diffusion)		**350.1**	**2.0**		**0.10**	**mg/L**	**1**

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%

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QC Summary

Inorganic non-metals - MB

Sample ID: VQ41785-001
Batch: 41785
Analytical Method: 350.1

Matrix: Aqueous
Prep Method: 350.1

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
Ammonia - N (gas diffusion)	ND		1	0.10	mg/L	01/14/2020 1158

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - LCS

Sample ID: VQ41785-002
Batch: 41785
Analytical Method: 350.1
Matrix: Aqueous
Prep Method: 350.1

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Ammonia - N (gas diffusion)	1.0	0.94		1	94	90-110	01/14/2020 1200

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Chain of Custody

Pace Analytical® www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: NC
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 1/13/2020 Results Requested By: 1/15/2020

Workorder: 92460451 **Workorder Name:** Ammonia

Report To	Subcontract To
Taylor Ezell Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical West Columbia 108 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700

VA14005
CSD

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Subbed work within PAST WET	Ammonia	LAB USE ONLY
1	LLAR-SW-01-011120	PS	1/11/2020 13:58	92460451001	Water	1	X		
2	LLAR-SW-02-011120	PS	1/11/2020 14:05	92460451002	Water	1	X		
3	LLAR-SW-03-011120	PS	1/11/2020 14:14	92460451003	Water	1	X		
4	LLAR-SW-04-011120	PS	1/11/2020 15:32	92460451004	Water	1	X		
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	YCO, PACE 1/13/20	1800		
2				
3	Fed EX	1/14/20 0932	Lindsay Hall	1/14/20 0932

Comments

Cooler Temperature on Receipt 2.3 °C | **Custody Seal** Y/or (N) | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

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Sample Receipt Checklist (SRC)

Client: PACE Analytical Cooler Inspected by/date: LKH / 01/14/2020 Lot #: VA14005

Means of receipt: ☐ SESI ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: 19-2351 Chlorine Strip ID: 19-2629 Tested by: LKH

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

2.3 /2.3 °C NA /NA °C NA /NA °C NA /NA °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☑ No	☐ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☑ Yes	☐ No	☐ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) 001, 002, 003, & 004 were received incorrectly preserved and were adjusted accordingly in sample receiving with 2.5 mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # 19-007.
Time of preservation 0941. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: LKH Date: 01/14/2020

Comments: